

Accessories – Gasket Information for Diaphragm Seals

Description

Gaskets are used to assemble a flanged construction and prevent it from leaking. Flanged diaphragm seals types and some accessories such as flush and reducer flanges are to be mounted with gaskets. Gaskets are not part of Badotherm standard scope of supply, but our product dimensions can have an impact on the choice of gasket design. On request, with clear specifications provided, Badotherm can include gaskets in their scope of supply.

Gasket selection needs to be done carefully, as there can be several specifications applicable, depending on pressure, temperature and process conditions. Many end users also have own guidelines to be used.

Material of construction

Gaskets are available in several materials. And the material quality is defined by different ASTM and EN standards. Therefore Badotherm can not advice in choice of materials of the gaskets.

Type of gaskets

Three main categories of gaskets are used in combination with diaphragm seals. The spiral wound, the grooved, and the metallic gaskets. With all three categories there are variants such as shape of the ring (oval, octagonal, Rx), the use of an inner ring or the type of the outer ring. For all three main categories the dimensions are shown in the below tables.

Spiral wound gasket

The spiral wound gasket is semi-metallic, comprising of a spiral wound v-shaped stainless steel strip and a non-metallic filler material, such as graphite or PTFE. Also on the gasket, is a solid outer ring used for centering and controlling compression. This minimizes the risk of material creep through over-tightening. This type of gasket is also available with an additional inner ring to enclose the spiral wound core.

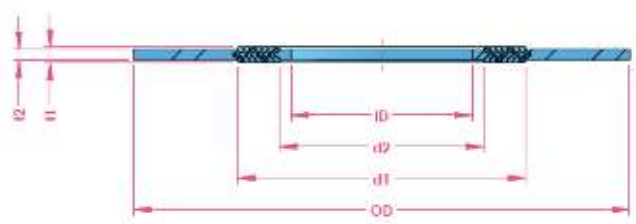
Grooved gasket

The grooved gasket is a metal core with grooves. To protect the flanges this metal core is covered with a layer of a different material. Depending on the process, temperature and pressure the materials can be PTFE, Graphite, silver or aluminium.



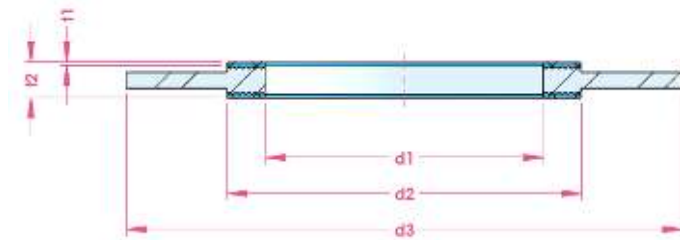
Metallic gasket

A metallic gasket is a solid metal round gasket. The section of the gasket can be of an oval or an octagonal shape. These types of gaskets are used for Ring type Joints. Materials for the gaskets are depending on the compatibility of the process conditions. It can be soft iron up to titanium or super duplex.



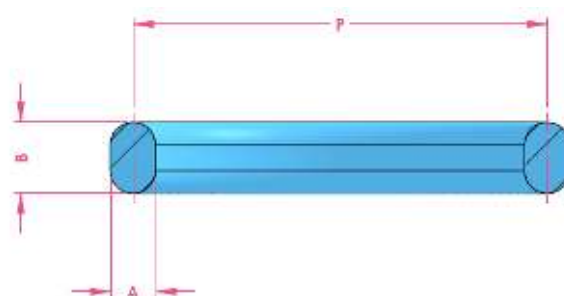
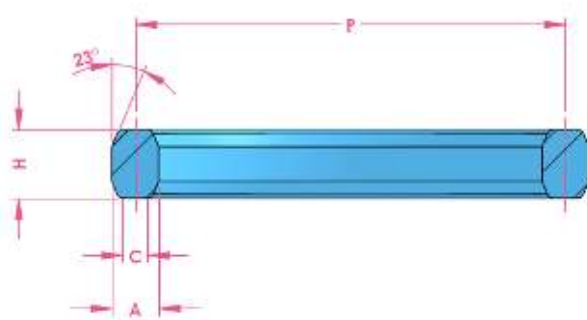
Size		t1	t2	150	300	600	900	1500	2500
0.5	d1	+/- 4.45	2.97-3.33	31.8					
	d2			19.1					
	OD			47.8	54.1			63.5	69.9
	ID			14.2					
0.75	d1			39.6					
	d2			25.4					
	OD			57.2	66.8			69.9	76.2
	ID			20.6					
1	d1			47.8					
	d2			31.8					
	OD			66.8	73.2			79.9	85.9
	ID			26.9					
1.25	d1			60.5					
	d2			47.8					
	OD			76.2	82.6			88.9	104.9
	ID			38.1					
1.5	d1			69.9					
	d2			54.1					
	OD			85.9	95.3			98.6	117.6
	ID			44.5					
2	d1			85.9					
	d2			69.9					
	OD			104.9	111.3			143.0	146.1
	ID			55.6					
2.5	d1			98.6					
	d2			82.6					
	OD			124.0	130.3			165.1	168.4
	ID			66.5					
3	d1			120.7					
	d2			101.6					
	OD			136.7	149.4			168.4	174.8
	ID			81.0					
							78.7		

Dimensions table: Spiral wound gasket according ASME B16.20



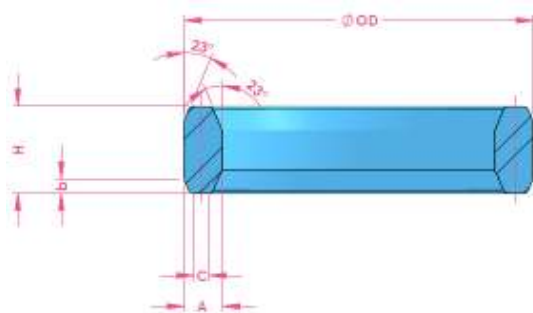
Size	d1	d2	150	300	600	900	1500	2500
0.5	23.0	33.3	44.4	50.8	60.3	66.7		
0.75	28.6	39.7	53.9	63.5	66.7	73.0		
1	36.5	47.6	63.5	69.8	76.2	82.5		
1.25	44.4	60.3	73	79.4	85.7	101.6		
1.5	54.2	69.8	82.5	92.1	95.2	114.3		
2	69.8	88.9	101.6	108.0	139.7	142.8		
2.5	82.5	101.6	120.6	127.0	161.9	165.1		
3	98.4	123.8	133.4	146.1	165.1	171.5	193.7	

Dimensions table: Metallic RTJ gasket according ASME B16.20



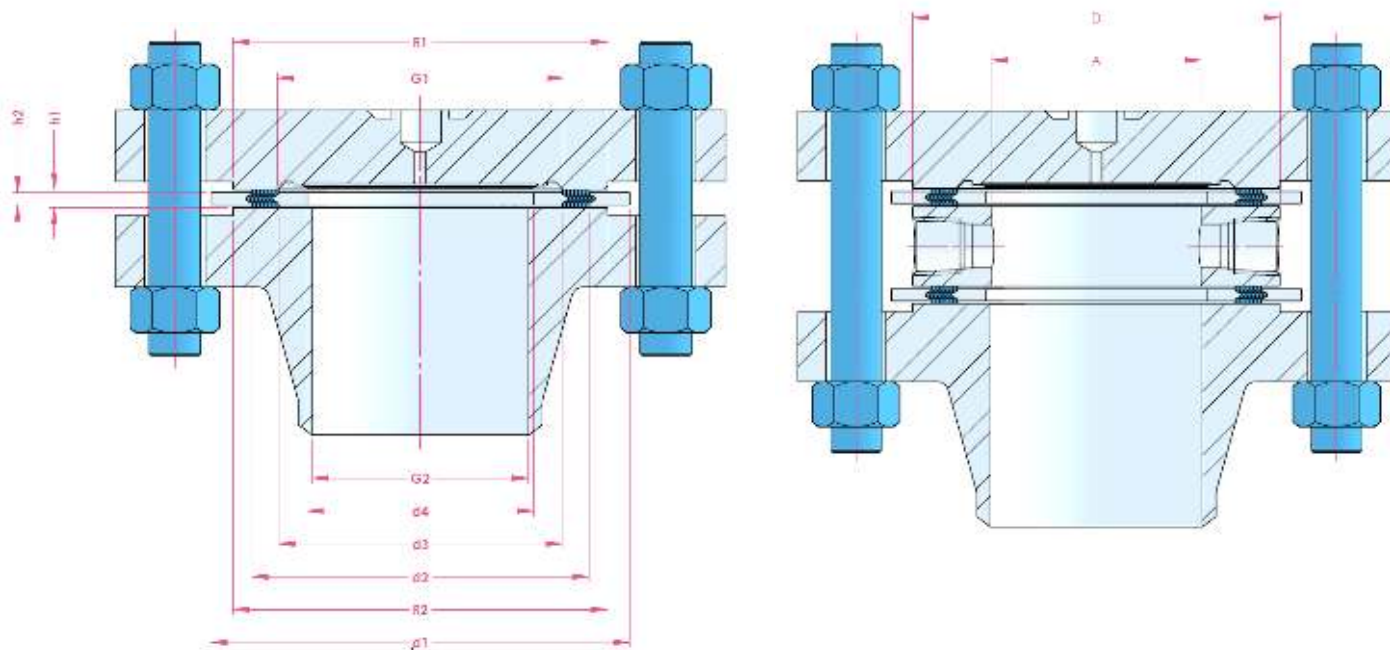
No	P	A	B	H	C	R1
R 11	34.14	6.35	11.2	9.7	4.32	1.5
R 12	39.7	7.95	14.2	12.7	5.23	
R 13	42.88					
R 14	44.45					
R 15	47.63					
R 16	50.8					
R 17	57.15					
R 18	60.33					
R 19	65.1					
R 20	68.28					
R 21	72.24	11.13	17.5	16	7.75	
R 22	82.55	7.95	14.2	12.7	5.23	
R 23	82.55	11.13	17.5	16	7.75	
R 24	95.25					
R 25	101.6	7.95	14.2	12.7	5.23	
R 26	101.6	11.13	17.5	16	7.75	
R 27	107.95					
R 28	111.13	12.7	19.1	17.5	8.66	
R 29	114.3	7.95	14.2	12.7	5.23	
R 30	117.48	11.13	17.5	16	7.75	
R 31	123.83					
R 32	127	12.7	19.1	17.5	8.66	

Dimensions table: Spiral wound gasket according ASME B16.20



No	OD	A	C	b	H	R1
RX-23	93.27	11.91	6.45	4.24	25.40	1.5
RX-24	105.97					
RX-25	109.55	8.74	4.62	3.18	19.05	
RX-26	111.91	11.91	6.45	4.24	25.40	
RX-27	118.26					
RX-31	134.54					
RX-35	147.24					
RX-37	159.94					
RX-39	172.64					

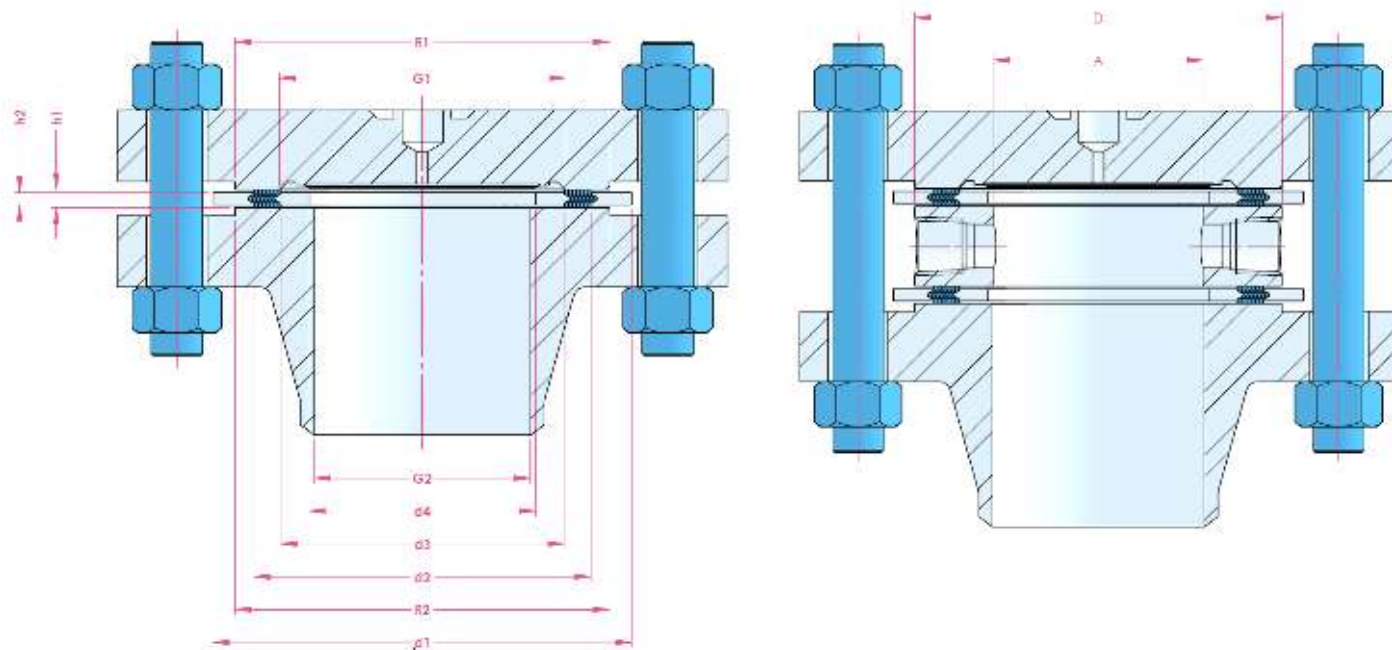
Dimensions table: B(R)F seal with spiral wound gasket according ASME 16.20



size	rating	G1	G2	R1 = R2	h1	h2	d1	d2	d3	d4	A	D											
1"	cl. 150	31.8	26.6	50.8	4.45	2.97 to 3.33	66.8	47.8	31.8	26.9	26.6	50.8											
	cl. 300		Note 1				73.2																
	cl. 400-600						79.5																
	cl. 900-1500						85.9																
	cl. 2500						76.2																
1,25"	cl. 150	41.5	35.1	63.5			82.6	60.5	47.8	38.1	35.1	63.5											
	cl. 300		Note 1				88.9																
	cl. 400-600	39.8					104.9		39.6	33.3													
	cl. 900-1500						85.9		54.1	44.5													
	cl. 2500						95.3																
1,5"	cl. 150	52.4	40.9	73.0			98.6	69.9	47.8	41.4	40.9	73.0											
	cl. 300		Note 1				117.6																
	cl. 400-600	41.5					104.9		69.9	55.6													
	cl. 900-1500						111.3																
	cl. 2500						143.0	85.9	58.7	52.3	52.5	92.1											
2"	cl. 150	70.2	52.5	92.1			146.1																
	cl. 300		Note 1				124.0		98.6	82.6	63.5	62.7											
	cl. 400-600	55.4					130.3																
	cl. 900-1500						165.1																
	cl. 2500						168.4																
2,5"	cl. 150	70.2	62.7	104.8			136.7	120.7	101.6	81.0	77.9	127.0											
	cl. 300		Note 1				149.4																
	cl. 400-600						168.4		95.3	78.7													
	cl. 900						174.8																
	cl. 1500						196.9		92.2														
3"	cl. 2500	93.0	77.9	127.0			174.8	149.4	127.0	106.4	102.3	157.2											
	cl. 150		102.3				181.1																
	cl. 300						177.8		120.7	102.6													
	cl. 400						193.8																
	cl. 600						206.5		117.6	97.8													
4"	cl. 900		Note 1	157.2			209.6																
	cl. 1500						235.0																
	cl. 2500																						

Note 1: Size is to be specified by purchaser.

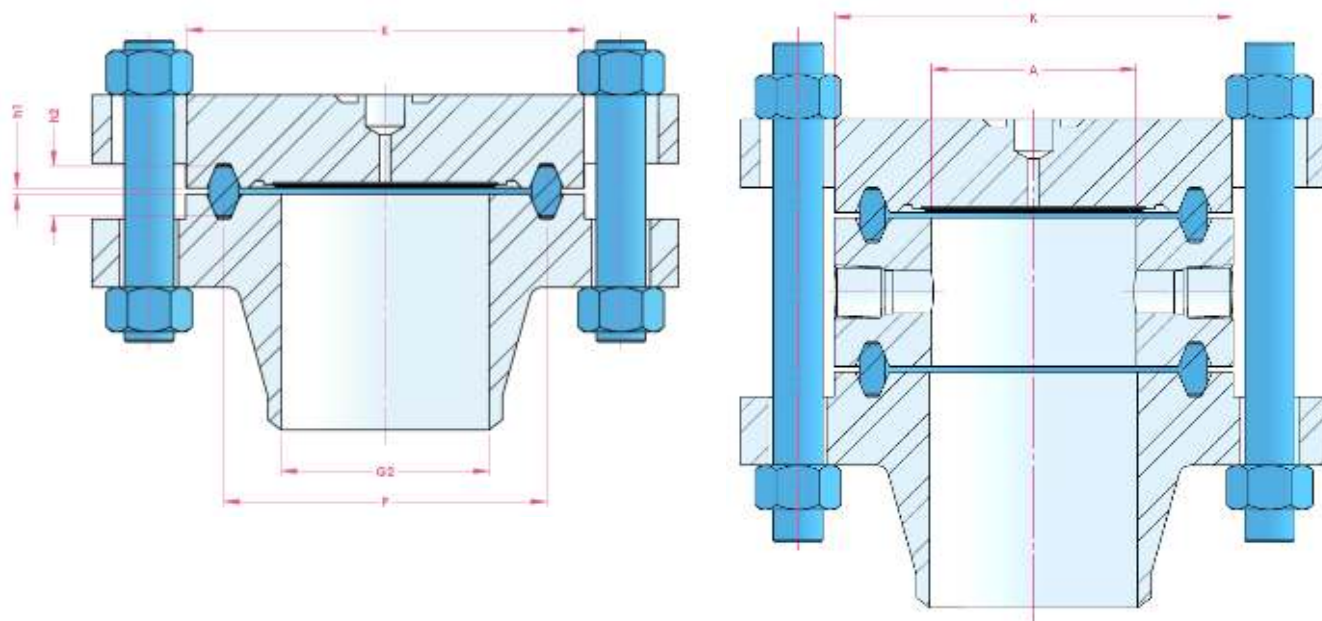
Dimensions table: B(R)F seal with grooved gasket according ASME 16.20



size	rating	G1	G2	R1 = R2	h1	h2	d1	d2	d4	A	D	
1"	cl. 150	31.8	26.6	50.8	4.45	2.97 to 3.33	66.8	47.8	32.0	26.6	50.8	
	cl. 300		Note 1				73.2					
	cl. 400-600						79.5					
	cl. 900-1500						85.9					
	cl. 2500						76.2					
1,25"	cl. 150	41.5	35.1	63.5			82.6	60.5	40.0	35.1	63.5	
	cl. 300		Note 1				88.9					
	cl. 400-600						104.9					
	cl. 900-1500	85.9										
	cl. 2500	95.3										
1,5"	cl. 150	52.4	40.9	73.0			98.6	69.9	45.0	40.9	73.0	
	cl. 300		Note 1				117.6					
	cl. 400-600						104.9					
	cl. 900-1500	111.3										
	cl. 2500	143.0										
2"	cl. 150	70.2	52.5	92.1			146.1	85.9	60.0	52.5	92.1	
	cl. 300		Note 1				124.0					
	cl. 400-600						130.3					
	cl. 900-1500	165.1										
	cl. 2500	168.4										
2,5"	cl. 150	70.2	62.7	104.8			136.7	98.6	70.0	62.7	104.8	
	cl. 300		Note 1				149.4					
	cl. 400-600						168.4					
	cl. 900-1500						174.8					
	cl. 2500						196.9					
3"	cl. 150	93.0	77.9	127.0			174.8	120.7	85.0	77.9	127.0	
	cl. 300		Note 1				181.1					
	cl. 400-600						177.8					
	cl. 900						193.8					
	cl. 1500						206.5					
4"	cl. 2500		Note 1	157.2			209.6	149.4	100.0	102.3	157.2	
	cl. 150	235.0										
	cl. 300											
	cl. 400											
	cl. 600											

Note 1: Size is to be specified by purchaser.

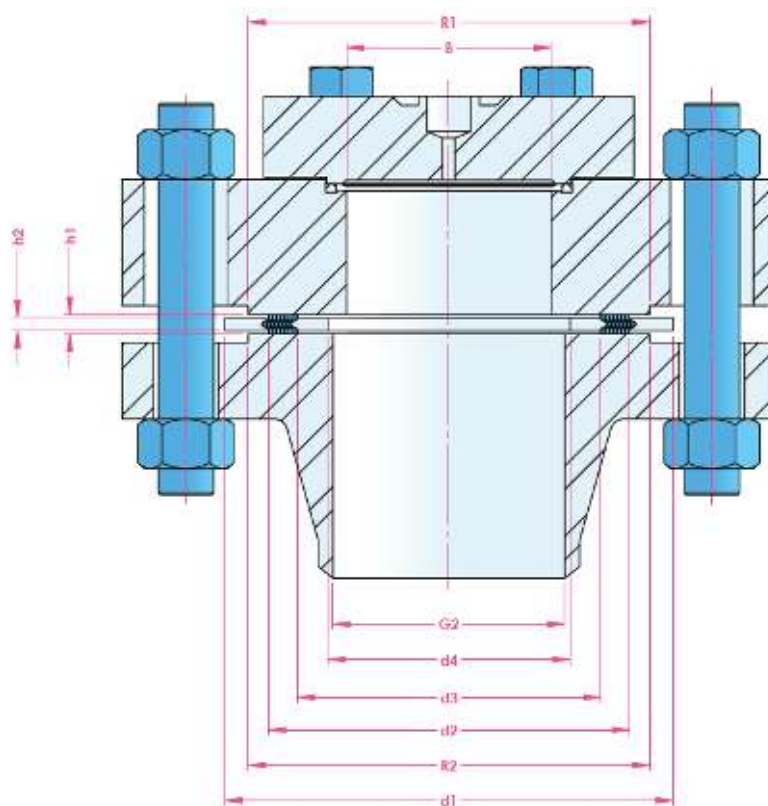
Dimensions table: BF seal with metallic ring gasket according ASME 16.20



size	rating	G2 = A	K	P	h1	h2	Groove number
1"	cl. 150	26.6	63.5	47.63	4.0	16.7	15
	cl. 300		70.0	50.80			16
	cl. 400-600	Note 1	71.5				18
	cl. 900-1500		82.5	60.33			17
1,25"	cl. 150	35.1	73.0	57.15	3.0	18.84	21
	cl. 300		79.5	60.33			
	cl. 400-600	Note 1	81.0				
	cl. 900-1500		102.0	72.23			
1,5"	cl. 150	40.9	82.5	60.33	4.0	16.7	19
	cl. 300		90.5	65.07			
	cl. 400-600	Note 1	92.0	68.27			
	cl. 900-1500		114.0				
2"	cl. 150	52.5	102.0	82.55	6.0	21.84	23
	cl. 300		108.0				
	cl. 400-600	Note 1	124.0				
	cl. 900-1500		133.0	95.25			
2,5"	cl. 150	62.7	121.0	101.60	4.0	16.7	25
	cl. 300		127.0				
	cl. 400-600	Note 1	133.0				
	cl. 900-1500		137.0	107.95			
3"	cl. 150	77.9	149.0	111.13	3.0	22.06	28
	cl. 300		133.0				
	cl. 400-600	Note 1	146.0				
	cl. 900		156.0	128.83			
4"	cl. 1500	102.3	168.0	136.53	4.0	16.7	36
	cl. 2500		171.0				
	cl. 300	Note 1	175.0				
	cl. 400		181.0	149.23			
	cl. 600	Note 1	194.0	161.93	3.0	18.84	39
	cl. 900		203.0				
	cl. 1500	Note 1	171.0				
	cl. 2500		175.0				

Note 1: Size is to be specified by purchaser.
 Sizes h1 and h2 are approximate calculated distances.

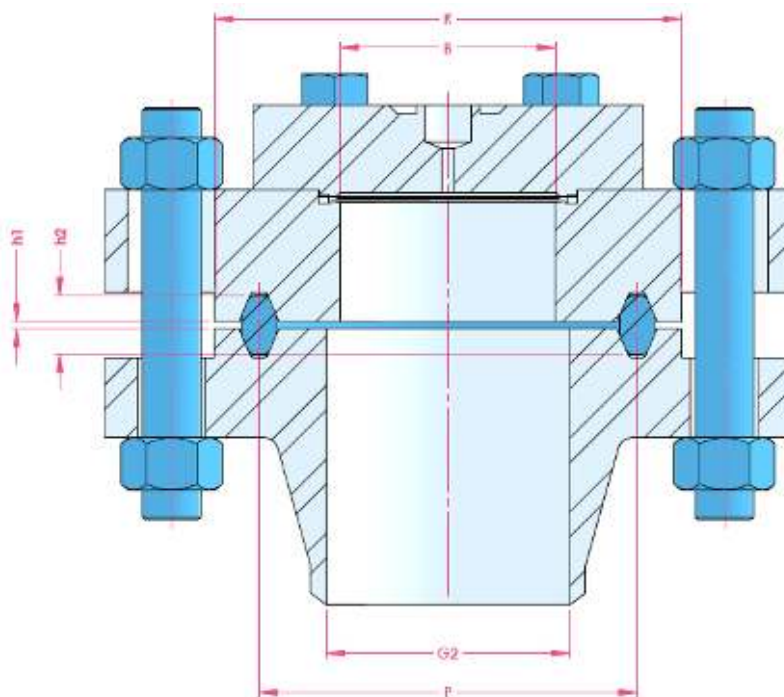
Dimensions table: US(L) seal with grooved gasket according ASME 16.20



size	rating	B	G2	R1 = R2	h1	h2	d1	d2	d3	d4			
0.5"	cl. 150	15.8	15.7	34.9	4.45	2.97 to 3.33	47.8	31.8	19.1	14.2			
	cl. 300		Note 1				54.1						
	cl. 400-600						63.5						
	cl. 900-1500						69.9						
	cl. 2500						57.2						
0.75"	cl. 150	21.0	20.8	42.9			66.8	39.6	25.4	20.6			
	cl. 300		Note 1				69.9						
	cl. 400-600						76.7						
	cl. 900-1500						66.8						
	cl. 2500						66.8						
1"	cl. 150	26.6	26.6	50.8			73.2	47.8	31.8	32.0			
	cl. 300		Note 1				79.5						
	cl. 400-600						85.9						
	cl. 900-1500						76.2						
	cl. 2500						82.6						
1,25"	cl. 150	35.1	35.1	63.5			88.9	60.5	47.8	40.0			
	cl. 300		Note 1				104.9						
	cl. 400-600						85.9						
	cl. 900-1500						95.3						
	cl. 2500						98.6						
1,5"	cl. 150	40.9	40.9	73.0			117.6	69.9	54.1	45.0			
	cl. 300		Note 1				104.9						
	cl. 400-600						111.3						
	cl. 900-1500						143.0						
	cl. 2500						146.1						
2"	cl. 150	47.0	52.5	92.1				85.9	69.9	60.0			
	cl. 300		Note 1										
	cl. 400-600												
	cl. 900-1500												
	cl. 2500												

Note 1: Size is to be specified by purchaser. ; Sizes h1 and h2 are approximate calculated distances.

Dimensions table: US(L) seal with metallic ring gasket according ASME 16.20



size	rating	G2	B	K	P	h1	h2	Groove number						
1"	cl. 150	26.6	26.6	63.5	47.63	4.0	16.7	15						
	cl. 300	Note 1		70.0	50.80			16						
	cl. 400-600			71.5	60.33			18						
	cl. 900-1500			82.5				17						
	cl. 2500			73.0				57.15	18					
1,25"	cl. 150	35.1	35.1	79.5	60.33	3.0	18.84	21						
	cl. 300	Note 1		81.0	72.23									
	cl. 400-600			102.0	60.33									
	cl. 900-1500			82.5	60.33									
	cl. 2500			90.5	65.07				4.0	16.7	20			
1,5"	cl. 150	40.9	40.9	92.0	68.27	19.84	23							
	cl. 300	Note 1		114.0	82.55			6.0				21.84		
	cl. 400-600			102.0									5.0	20.84
	cl. 900-1500			108.0										
	cl. 2500			124.0					101.60					
2"	cl. 150	52.5	47/52.5 ²	133.0	3.0	18.84	26							
	cl. 300	Note 1		95.25										
	cl. 400-600													
	cl. 900-1500													
	cl. 2500													

Note 1: Size is to be specified by purchaser.

Note 2: 47.0 for US, 52.5 for USL

Sizes h1 and h2 are approximate calculated distances.

Dimensions table: ASME B16.5 stud bolts for blind flange use

Flange size	rating	D	L _{CSB} (RF)	L _{CSB} (RF)	L _{CSB} (RJF) (mm)	L _{CSB} (RJF)	pcs/flange
0.5"	cl. 150	1/2"	55	2.25"	-		4
	cl. 300		65	2.5"	75	3.0"	
	cl. 400-600		75	3.0"	75	3.0"	
	cl. 900-1500	3/4"	110	4.25"	110	4.25"	
	cl. 2500		120	4.75"	120	4.75"	
0.75"	cl. 150	1/2"	65	2.5"			
	cl. 300	5/8"	75	3.0"	90	3.5"	
	cl. 400-600		90	3.5"	90	3.5"	
	cl. 900-1500	3/4"	115	4.5"	115	4.5"	
	cl. 2500		125	5.0"	125	5.0"	
1.0"	cl. 150	1/2"	65	2.5"	75	3.0"	
	cl. 300	5/8"	75	3.0"	90	3.5"	
	cl. 400-600		90	3.5"	90	3.5"	
	cl. 900-1500	7/8"	125	5.0"	125	5.0"	
	cl. 2500		140	5.5"	140	5.5"	
1.25"	cl. 150	5/8"	70	2.75"	85	3.25"	
	cl. 300		85	3.25"	95	3.75"	
	cl. 400-600		95	3.75"	95	3.75"	
	cl. 900-1500	7/8"	125	5.0"	125	5.0"	
	cl. 2500	1.0"	150	6.0"	150	6.0"	
1.5"	cl. 150	1/2"	70	2.75"	85	3.25"	
	cl. 300	5/8"	90	3.5"	100	4.0"	
	cl. 400-600	3/4"	110	4.25"	110	4.25"	
	cl. 900-1500	1.0"	140	5.5"	140	5.5"	
	cl. 2500	1 1/8"	170	6.75"	170	6.75"	
2"	cl. 150	5/8"	85	3.25"	95	3.75"	8
	cl. 300	5/8"	90	3.5"	100	4.0"	
	cl. 400-600	3/4"	110	4.25"	100	4.25"	
	cl. 900-1500	7/8"	145	5.75"	145	5.75"	
	cl. 2500	1.0"	180	7.0"	180	7.0"	
3"	cl. 150	5/8"	90	3.5"	100	4.0"	4
	cl. 300	3/4"	110	4.25"	120	3.5"	8
	cl. 400-600		125	5.0"	125	5.0"	
	cl. 900	7/8"	145	5.75"	145	5.75"	
	cl. 1500	1 1/8"	180	7.0"	180	7.0"	
4"	cl. 2500	1 1/4"	220	8.75"	230	9.0"	
	cl. 150	5/8"	90	3.5"	100	4.0"	
	cl. 300	3/4"	115	4.5"	125	3.75"	
	cl. 400	7/8"	140	5.5"	135	5.5"	
	cl. 600		145	5.75"	145	5.75"	
	cl. 900	1 1/8"	170	6.75"	170	6.75"	
	cl. 1500	1 1/4"	195	7.75"	195	7.75"	
	cl. 2500	1 1/2"	255	10.0"	260	10.25"	

The length of the stud bolt does not include the height of the points
 Stud bolt length are a suggestion and should be reviewed by the user at all times.
 mm length sizes are based on the metric section of the ASME B16.5
 Inch length sizes are based on the imperial section of the ASME B16.5

Dimensions table: ASME B16.5 stud bolts for tapped hole use

Flange size	rating	D	L _{CSB} (RF)	L _{CSB} (RF)	L _{CSB} (RJF) (mm)	L _{CSB} (RJF) (inch)	pcs/flange
0.5"	cl. 150	1/2"	55	2.25"	-	-	4
	cl. 300	3/4"	55	2.25"	55	2.25"	
	cl. 400-600		65	2.5"	75	3.0"	
	cl. 900-1500		90	3.5"	90	3.5"	
	cl. 2500		110	4.25"	110	4.25"	
0.75"	cl. 150	1/2"	55	2.25"	-	-	
	cl. 300	5/8"	65	2.5"	75	3.0"	
	cl. 400-600		75	3.0"	75	3.0"	
	cl. 900-1500		110	4.25"	110	4.25"	
	cl. 2500		110	4.25"	110	4.25"	
1.0"	cl. 150	1/2"	55	2.25"	55	2.25"	
	cl. 300	5/8"	65	2.5"	75	3.0"	
	cl. 400-600		90	3.5"	90	3.5"	
	cl. 900-1500		110	4.25"	110	4.25"	
	cl. 2500		110	4.25"	110	4.25"	
1.25"	cl. 150	5/8"	70	2.75"	85	3.25"	
	cl. 300		70	2.75"	85	3.25"	
	cl. 400-600		90	3.5"	90	3.5"	
	cl. 900-1500		110	4.25"	110	4.25"	
	cl. 2500	1.0"	125	5.0"	125	5.0"	
1.5"	cl. 150	1/2"	65	2.5"	75	3.0"	8
	cl. 300	5/8"	75	3.0"	75	3.0"	
	cl. 400-600	3/4"	120	4.75"	120	4.75"	
	cl. 900-1500	1.0"	110	4.25"	110	4.25"	
	cl. 2500	1 1/8"	140	5.5"	140	5.5"	
2"	cl. 150	5/8"	90	3.5"	100	4.0"	
	cl. 300	5/8"	85	3.25"	95	3.75"	
	cl. 400-600	3/4"	110	4.25"	100	4.25"	
	cl. 900-1500	7/8"	115	4.5"	115	4.5"	
	cl. 2500	1.0"	145	5.75"	145	5.75"	
3"	cl. 150	5/8"	90	3.5"	100	4.0"	8
	cl. 300	3/4"	90	3.5"	100	4.0"	
	cl. 400-600		115	4.5"	125	3.75"	
	cl. 900		115	4.5"	125	3.75"	
	cl. 1500		180	7.0"	180	7.0"	
4"	cl. 2500	1 1/4"	170	6.75"	170	6.75"	
	cl. 150	5/8"	90	3.5"	100	4.0"	
	cl. 300	3/4"	90	3.5"	100	4.0"	
	cl. 400	7/8"	115	4.5"	125	3.75"	
	cl. 600		115	4.5"	125	3.75"	
	cl. 900		140	5.5"	135	5.5"	
	cl. 1500		170	6.75"	170	6.75"	
	cl. 2500	1 1/2"	195	7.75"	195	7.75"	

The length of the stud bolt does not include the height of the points

Stud bolt length are a suggestion and should be reviewed by the user at all times.

mm length sizes are based on the metric section of the ASME B16.5

Inch length sizes are based on the imperial section of the ASME B16.5

Dimensions table: EN 1092-1 stud bolts for blind flange use

size	rating	D	L _{CSB} (B1) (mm)	pcs/flange
DN20	PN10-40	M12	70	4
	PN63-100	M16	85	
DN25	PN10-40	M12	70	
	PN63-100	M16	90	
	PN160	M16		
	PN250	M20	105	
	PN320	M20	115	
	PN400	M24	135	
DN32	PN10-40	M16	80	
	PN63-100	M20	100	
DN40	PN10-40	M16	80	
	PN63-100	M20	100	
	PN160	M20	105	
	PN250	M24	125	
	PN320	M24	135	
	PN400	M30	165	
DN50	PN10-40	M16	80	
	PN63	M20	100	
	PN100	M24	115	
	PN160	M24	115	
	PN250	M24	135	
	PN320	M24	140	8
	PN400	M27	170	
DN80	PN10-40	M16	90	
	PN63	M20	105	
	PN100	M24	120	
	PN160	M24	130	
	PN250	M27	155	
	PN320	M27	175	
	PN400	M30	205	
DN100	PN10-16	M16	80	
	PN25-40	M20	100	
	PN63	M24	115	
	PN100	M27	135	
	PN160	M27	145	
	PN250	M30	180	
	PN320	M33	205	
	PN400	M36	240	

The length of the stud bolt does not include the height of the points
 Stud bolt length are a suggestion and should be reviewed by the user at all times.

Dimensions table: EN 1092-1 stud bolts for tapped hole use

size	rating		L _{CSB} (B1)	pcs/flang
DN20	PN10-40	M12	55	4
	PN63-100	M16	70	
DN25	PN10-40	M12	55	
	PN63-100	M16	70	
	PN160	M16	70	
	PN250	M20	85	
	PN320	M20	90	
DN32	PN10-40	M16	65	
	PN63-100	M20	80	
DN40	PN10-40	M16	65	
	PN63-100	M20	85	
	PN160	M20	85	
	PN250	M24	100	
	PN320	M24	105	
	PN400	M30	130	
DN50	PN10-40	M16	70	8
	PN63	M20	85	
	PN100	M24	95	
	PN160	M24	95	
	PN250	M24	105	
	PN320	M24	110	
DN80	PN400	M27	125	
	PN10-40	M16	70	
	PN63	M20	85	
	PN100	M24	100	
	PN160	M24	105	
	PN250	M27	120	
	PN320	M27	130	
DN100	PN400	M30	150	
	PN10-16	M16	65	
	PN25-40	M20	80	
	PN63	M24	95	
	PN100	M27	110	
	PN160	M27	115	
	PN250	M30	135	
	PN320	M33	155	
	PN400	M36	180	

The length of the stud bolt does not include the height of the points
Stud bolt length are a suggestion and should be reviewed by the user at all times.

ACC – 17th of June 2022

Change log

Date	Change

Holland – Romania – India – Thailand – Dubai – USA

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